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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of:

KINSELLA et al.

Serial No.: 10/661,619 Group Art Unit: 2131

Filed: September 15, 2003

For: AUTHORISATION OF ONLINE TRANSACTIONS

CLAIM TO PRIORITY

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

The benefit of the filing date of the prior foreign application filed in the following foreign country is hereby requested and the right of priority provided in 35 U.S.C. §119 is hereby claimed:

European Patent Application No. EP01650028.2 filed 16 March 2001.

In support of this claim, filed herewith is a certified copy of said foreign application.

Respectfully submitted,

JACOBSON HOLMAN PLLC

By: _____
John C. Holman
Reg. No. 22,769

400 Seventh Street, N.W.
Washington, D.C. 20004-2201
Telephone: (202) 638-6666

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Bescheinigung | Certificate | Attestation

Die angehefteten Unterlagen stimmen mit der ursprünglich eingereichten Fassung der auf dem nächsten Blatt bezeichneten europäischen Patentanmeldung überein.

The attached documents are exact copies of the European patent application described on the following page, as originally filed.

Les documents fixés à cette attestation sont conformes à la version initialement déposée de la demande de brevet européen spécifiée à la page suivante.

Patentanmeldung Nr. | Patent application No. | Demande de brevet n°

01650028.2

Der Präsident des Europäischen Patentamts;
Im Auftrag

For the President of the European Patent Office

Le Président de l'Office européen des brevets
p.o.

R C van Dijk

DEN HAAG, DEN
THE HAGUE, 05/03/02
LA HAYE, LE

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Blatt 2 der Bescheinigung
Sheet 2 of the certificate
Page 2 de l'attestation

Anmeldung Nr.:
Application no.: 01650028.2
Demande n°:

Anmeldetag:
Date of filing: 16/03/01
Date de dépôt:

Anmelder:
Applicant(s):
Demandeur(s):
Fabrix Investments Limited
Dublin 12
IRELAND

Bezeichnung der Erfindung:
Title of the invention:
Titre de l'invention:
Authentication of online transactions

In Anspruch genommene Priorität(en) / Priority(ies) claimed / Priorité(s) revendiquée(s)

Staat: State: Pays:	Tag: Date: Date:	Aktenzeichen: File no. Numéro de dépôt:

Internationale Patentklassifikation:
International Patent classification:
Classification internationale des brevets:
G07F7/10, G07F7/08

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Etats contractants désignés lors du depôt:

Bemerkungen:
Remarks:
Remarques:

"Authorisation of online transactions"

Introduction

The invention relates to online transaction processing such as online banking, particularly for corporate customers.

At present, development of use of automated transaction processing is being limited by the lack of structures for effective authorisation of transactions where the customer is an organisation with a number of users.

The invention addresses this problem.

Statements of Invention

According to the invention, there is provided a system for performing on-line transactions, the system comprising means for authorising a transaction for a user of a customer having a plurality of users as follows:-

receiving a request for a proposed transaction; and

determining if the proposed transaction falls within the domain of an authorisation model, and if so, authorising the transaction only when a set of signatories within the customer organisation as defined by the authorisation model have approved it.

In one embodiment, the authorisation means comprises means for allowing an administration user of the customer to define the model in on-line communication with the system.

In another embodiment, the authorisation model comprises rules and the system comprises a rule engine comprises means for enforcing the rules.

In a further embodiment, a rule comprises a transaction condition associated with an authority state of approval users.

In one embodiment, the transaction condition comprises values for financial amount, transaction type, and account variables.

In another embodiment, the authority state comprises a collection of authority groups of approval users.

In a further embodiment, the authority group in turn comprises a collection of authority sets of approval users.

In one embodiment, the system comprises means for passing the transaction to a back office system for funds authorisation after transaction authorisation.

In another embodiment, the authorisation means comprises means for allowing an administration user to dynamically modify the authorisation model.

In one embodiment, the system comprises means for downloading instructions for a design wizard to guide said user through a rule definition process.

Detailed Description of the Invention

The invention will be more clearly understood from the following description of some embodiments thereof, given by way of example only with reference to the accompanying drawings in which:-

Fig. 1 is a schematic representation of how an authorisation rule is generated;

Fig. 2 is a flow diagram illustrating various transactions related to authorisation;

Figs. 3 and 4 are flow diagrams for steps for definition of an authorisation rule;

Fig. 5 is a diagram illustrating system components involved in definition of an authorisation rule, and Figs. 6 to 10 are screen shots illustrating creation of rules.

Referring to Fig. 1, at its simplest an authorisation model governs authorisation of transactions within a corporate customer organisation. Authorisation rules are developed by matching of transaction conditions with authority states. The transaction condition variables are amount, type, and account:

Amount is a currency defined numerical field that allows bands of authorisation rules to be created.

Type is an enumerated list allowing different authorisation schemas to be used for different banking services.

Account is a customer-specific list of accounts allowing tighter or looser rules to be imposed on specific accounts.

An authority state is a collection of authority groups, each of which is a collection of authority sets. An authority set is a collection of named individuals or department rank types defining what level of authorisation is required.

The state-group-set structure allows the authorisation administrator a fine grained level of control and combines this with the ease of administration of grouping sets together, to allow the simple addition of new rules; or new members within existing sets. This coupling of fine granularity control with coarse granularity of administration provides an easily-administrated and flexible system.

Finally, an authorisation rule is a specific association between a transaction condition and an authority state.

Referring to Fig. 2, the service provider is an online bank using a system called "Bankworld". When a user logs in the bank system determines if there are any transactions pending, and if so notifies the user. When a transaction is requested, the system determines if it is limited by the authorisation model. If not, it is posted to the back office which will perform funds authorisation (a check that funds for the proposed transaction are available). If it is limited by the model, (i.e. its characteristics match those limited by the model) then necessary signatories must be sought before posting to the back office.

Each customer has a user who is an authorisation administrator. The setting of an authorisation rule is performed by the administrator without the need for any involvement of bank staff. When an administrative request is made, the bank system firstly checks that the user is an administrator. An authorisation administrator is identified by being flagged as such by an administration tool. The flag is detected by a presentation layer.

If verification is positive, the system loads floating signatory groups and transaction conditions from a database. A rule design wizard then guides the administrator through a process for setting a rule. A rule database is then updated.

As shown in Fig. 3, the first step in this process is to define a transaction condition and associate it with an authority. The next step is to define the authority state. This involves defining a group of people who must sign approval for a signatory set. The example of Figs. 3 and 4 is relatively simple, for illustrative purposes. The following is the logic of the rule which is defined.

```
IF THE TRANSACTION COMPLIES WITH
        FT<500 [Transfer of less than IR£500 from ALL ACCOUNTS on Funds
Transfer]
THEN TRANSACTION IS SUCCESSFULLY SIGNED IF AUTHORITY STATE
Senior Authority IS TRUE

----------/----------

THE STATE Senior Authority IS TRUE IF ANY OF THE FOLLOWING SIGNATORY
SET(S) ARE TRUE:
        SIGNATORY SET: Signatory1
        [
                IS TRUE IF SIGNED BY THE FOLLOWING GROUPS(S) :
                Managers
                [
                        CONSISTING OF 2 OF RANK Level 2 FROM ANY OF
DEPARTMENT(S)
                        [
                                Dept1
                                ----OR----
                                Dept2
                        ]
                ]
        ]
```

The display screens illustrate the rule being developed in a manner as shown in Figs. 3 and 4.

Referring to Fig. 5, the authorisation design wizard is downloaded to the customer's Web client. On the server side there is a transaction type filter, an account list filter, and a localisation component. An authorisation rule engine manages definition of a rule and an authorisation data manager captures the data for rule definition. A database has floating transaction conditions and floating signatory states. A back-office sub-system stores account data and transaction programs.

Each user of BankWorld is assigned a set of user roles which configures their access to the system. A role either explicitly allows a service to be offered, explicitly disallows a service to be offered, or cares not whether a service is offered. The list of transactions a user is allowed access to is only those which have been explicitly allowed by a role they hold and which have not been explicitly disallowed by any other role they hold; this is the transaction filter.

A customer is the legal owner of a set of accounts and a user is a customer defined operator on a subset of those accounts. The account filter shows only accounts that a user has been allowed access rights to, less any accounts which are included from transactions on the basis that the department they belong to does not allow outgoing transactions to be made. This is the account filter.

BankWorld is an international product that holds within its database translations of all BankWorld generated text and this text can be retranslated by a customer into other languages. Each BankWorld user identifies a locale they wish to view information in and this locale describes the language and from then on all BankWorld messages to that user will be offered in the default language of the locale of their choice.

Account filters and transaction filters can be controlled by a bank administrator using the user administration tools. The choice of locale can be controlled by the user and the list of locales can be controlled by the bank through the system administration tools.

Regarding the authorisation rule engine, this is an executor that enforces the rules defined by the authorisation administration tool. On receipt of each transaction it tests the characteristics of the user-submitted transaction against the list of registered authorisation rules. If a characteristic identifies the transaction as being subject to

the registered rule, the authorisation rule engine determines the number of required signatures, retrieves from the database the set of signatures already associated with the transaction, and tests that the authorisation rule has been met. If the rule has been met, the transaction is posted to the back office for authorisation. If there is a signature deficiency the transaction is marked as pending, the new signature is stored, and prospective signatories are notified. If the transaction characteristics do not cause an authorisation rule to be triggered, the transaction is posted to the back office for funds authorisation.

Referring to Figs. 6 to 10, a new transaction condition can be created in a simple manner using drop-down lists as shown in Fig. 6, and a new authority state can be created as shown in Figs. 7 and 8. This involves specifying who is required to sign approval for each state. Authorisation (signatory) groups and sets may be created as shown in Figs. 9 and 10.

The following is an example case study to illustrate the invention.

WebWideBank – Internet Enabled financial institution using BankWorld as its Internet Channel

ClientsRus – Customer of WebWideBank that holds the following accounts

- DepositA – Demand Notice Savings Account (Used for Capital Expenditure)
- CurrentB – Current Account (Used for Day-to-day Expenditure)
- CurrentC – Current Account (Used for Marketing Expenses)

Alice – ClientsRus authorisation administrator

Bob – ClientsRus user who is ClientsRus IT Manager

Carol – ClientsRus user who is a ClientsRus IT Support Executive

Dave – ClientsRus user who is a ClientsRus Accountant

Edward – ClientsRus user who is a ClientsRus Sales Manager

Fiona – ClientsRus user who is a ClientsRus Director

Gerard – ClientsRus user who is a ClientsRus Sales Executive

Harriet – ClientsRus user who is a ClientsRus Director

Scenario

ClientsRus is a large corporate whose auditors have raised concerns about their purchase order mechanism. Their auditor's main concern was that although a PO system was in place it was more often ignored, and that ClientsRus had no mechanism in place that allowed the system to be enforced.

Happily for ClientsRus, their bankers WebWideBank have recently upgraded their Internet channel to use BankWorld that allows an automated PO system to be enforced on electronic transactions. ClientsRus signs up for this service, and the company secretary nominates **Alice** for the role of Authorization Administrator.

Alice, on login to the web interface is presented with a Java design tool that allows her to create the PO rules as directed by the auditors. The rules created by **Alice** are

1. Overseas Remittances for any amount from any account must be authorised by a ClientsRus Director
2. Domestic Transfers for any amount from any account must be authorised by a ClientsRus Manager
3. All transfers from DepositA for any amount must be authorised by **Dave** (the ClientsRus Accountant)
4. All transfers from any account for amounts greater than IEP 5000 must be authorised by **Dave** and a ClientsRus Director
5. All transfers from CurrentC must be approved by a member of the Sales Team
6. All transfers from CurrentC over IEP 2000 must be authorised by the Sales Manager

Carol is asked by her manager **Bob** to order a new colour laser printer costing USD 3000, and as it is capital expenditure to charge it to the DepositA accountant. The printer overseas vendor requires payment in full prior to delivery, so **Carol** logs onto the web to process the payment.

The exchange rate between USD and IEP when **Carol** inputs the payment is 1 USD = 0.66 IEP, so the transaction is for IEP 2000. **Carol** submits the payment for processing. The transaction conditions are checked, and the authorization rules triggered are

- 1 as the payment is an overseas remittance
- 3 as the payment is from the DepositA account

Carol is informed that she has insufficient authorisation to process this transaction, and **Dave**, **Fiona** and **Harriet** are all notified on their next login that there is a transaction pending their authorization.

Harriet logs in before **Fiona** and authorises the payment, and sends a mail message to **Dave**, reminding him how important this colour printer is for the company and asking him to expedite the matter. **Dave** then digitally signs the transaction. When **Fiona** logs in, the pending transaction notification has been removed, as once **Harriet** signed the transaction, rule 1 was satisfied.

Once **Dave** signed the transaction it was submitted to the back office for processing; if there was insufficient funds in the account the transaction may still be rejected, but the ClientsRus PO system has now been implemented to their auditors' approval.

It will be appreciated that the invention allows the following advantages for the customer

1. Commercial customers can manage the authorization level of each user at a local level in a flexible manner.
2. Commercial customers can set the conditions for each payment based on an infinite number of permutations.
3. Banks can provide an automated authorization system that can accommodate all existing flexibility in the manual process.
4. Because the method allows the banks and customers to use an automated process, transaction costs are reduced for both parties.
5. The process logs all changes in the conditions set and thus can be audited by the audit sections of both the bank and the customer.
6. Banks can be guaranteed that all transactions are processed by the authorized persons in the company.

The invention is not limited to the embodiments described but may be varied in construction and detail.

Claims

1. A system for performing on-line transactions, the system comprising means for authorising a transaction for a user of a customer having a plurality of users as follows:-

receiving a request for a proposed transaction; and

determining if the proposed transaction falls within the domain of an authorisation model, and if so, authorising the transaction only when a set of signatories within the customer organisation as defined by the authorisation model have approved it.

2. A system as claimed in claim 1, wherein the authorisation means comprises means for allowing an administration user of the customer to define the model in on-line communication with the system.

3. A system as claimed in claims 1 or 2, wherein the authorisation model comprises rules and the system comprises a rule engine comprises means for enforcing the rules.

4. A system as claimed in claim 3, wherein a rule comprises a transaction condition associated with an authority state of approval users.

5. A system as claimed in claim 4, wherein the transaction condition comprises values for financial amount, transaction type, and account variables.

6. A system as claimed in claims 4 or 5, wherein the authority state comprises a collection of authority groups of approval users.

7. A system as claimed in claim 6, wherein the authority group in turn comprises a collection of authority sets of approval users.

8. A system as claimed in any preceding claim, comprising means for passing the transaction to a back office system for funds authorisation after transaction authorisation.

9. A system as claimed in any preceding claim, wherein the authorisation means comprises means for allowing an administration user to dynamically modify the authorisation model.

10. A system as claimed in claim 9, wherein the system comprises means for downloading instructions for a design wizard to guide said user through a rule definition process.

11. A computer program product comprising software code for completing a system as claimed in any preceding claim when executing on a digital computer.

ABSTRACT

"Authorisation of online transactions"

A service provider on-line bank has a rule engine which maintains an authorisation model. The model is developed and maintained by an administration user of a customer. The model rules each associate a transaction condition with an authority state. The authority state comprises authority groups, in turn comprising authority sets of approval users. For a transaction to be authorised, all approval users must sign approval and the proposed transaction must comply with the transaction condition.

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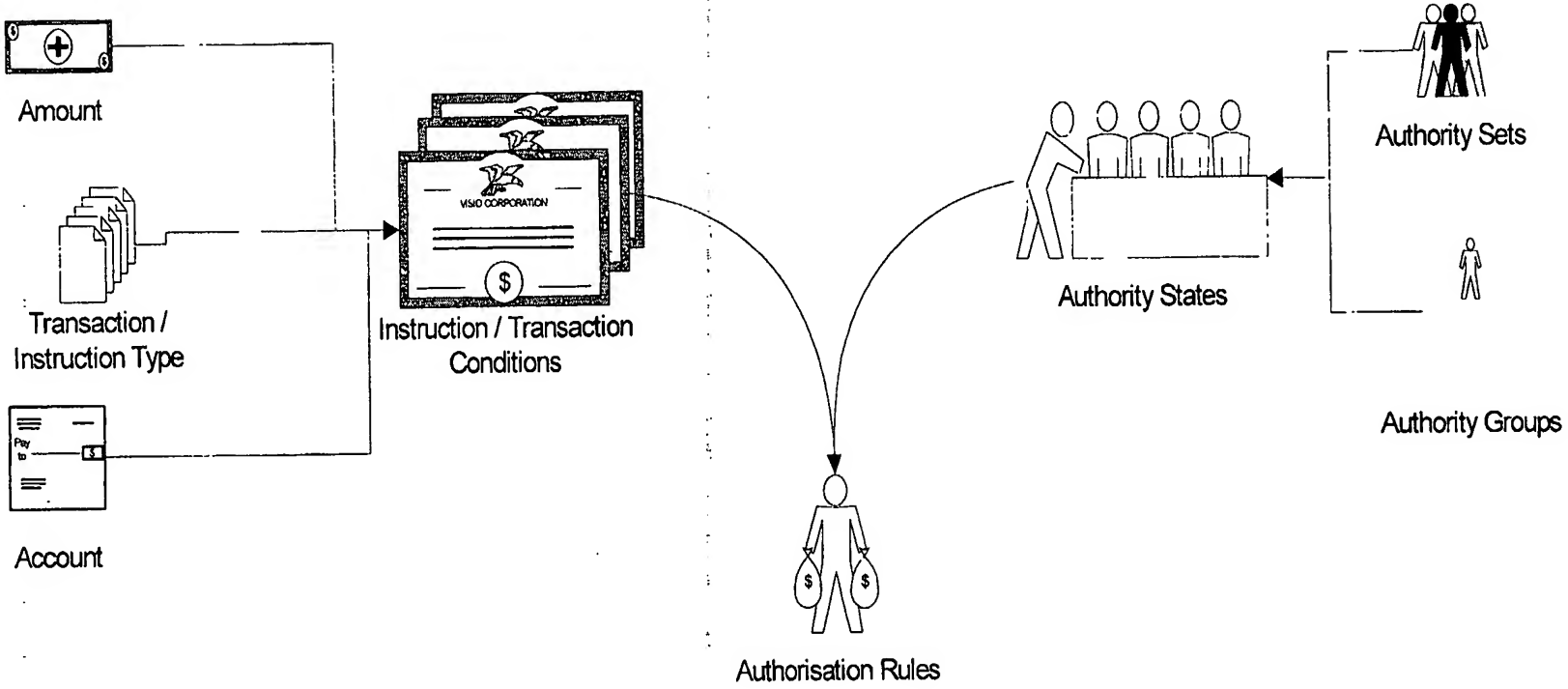
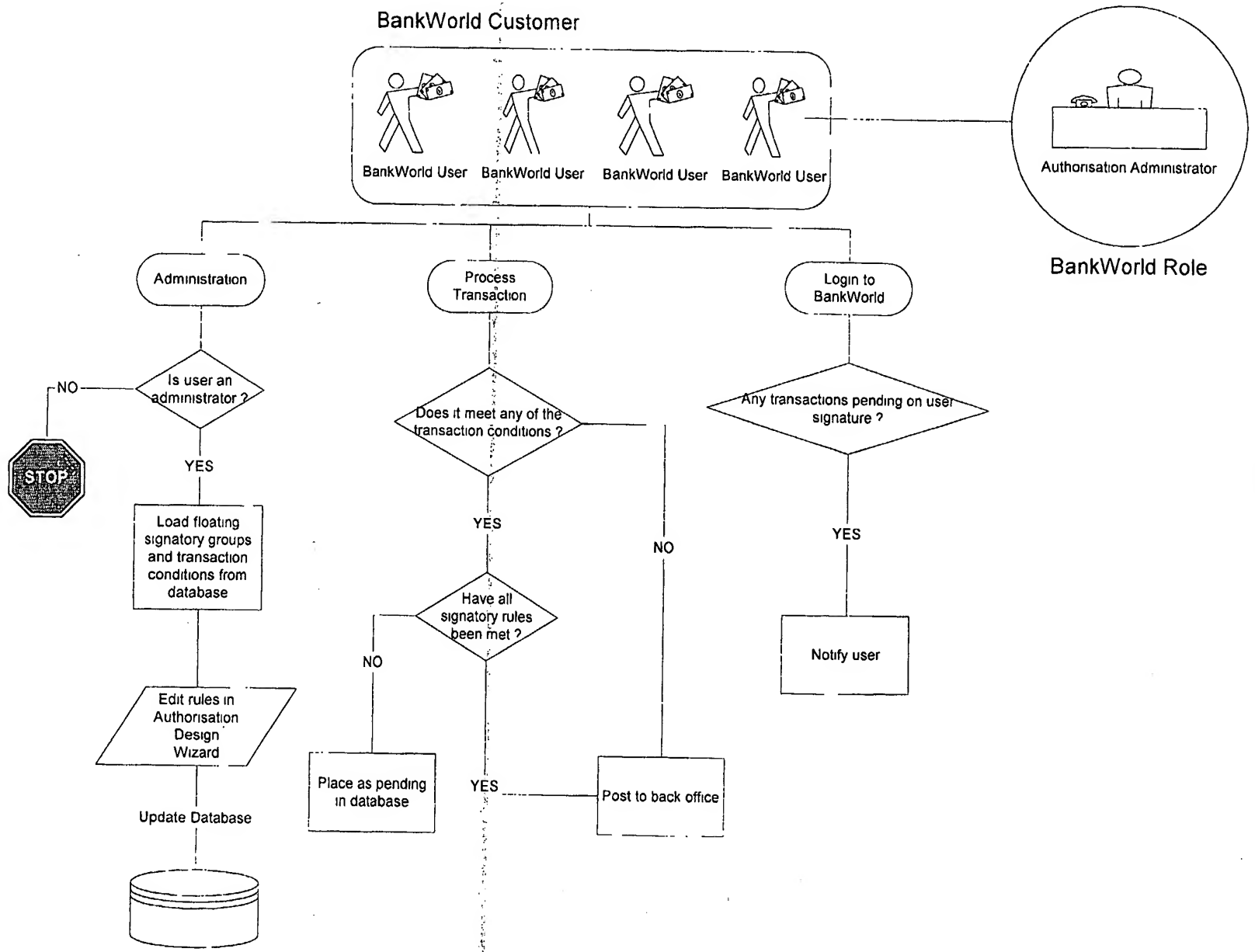


Fig. 1



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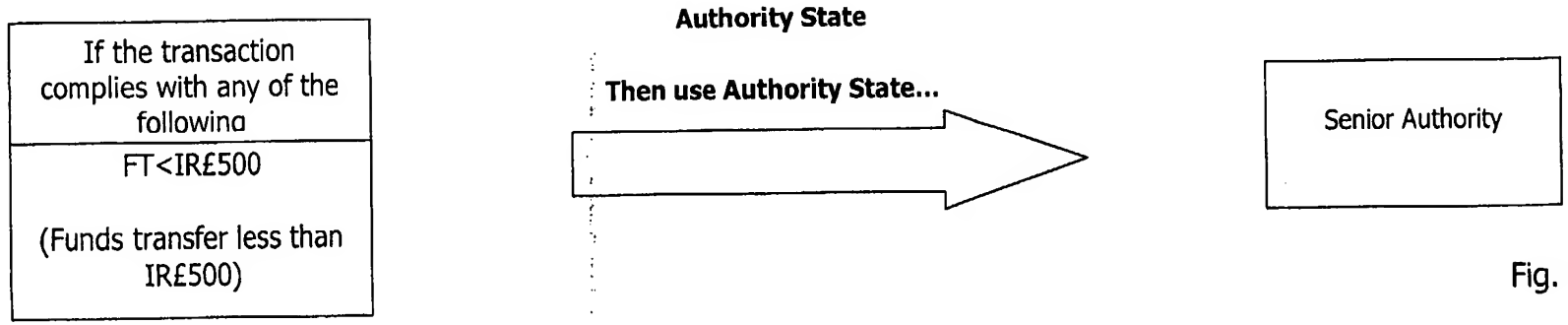

Fig. 3

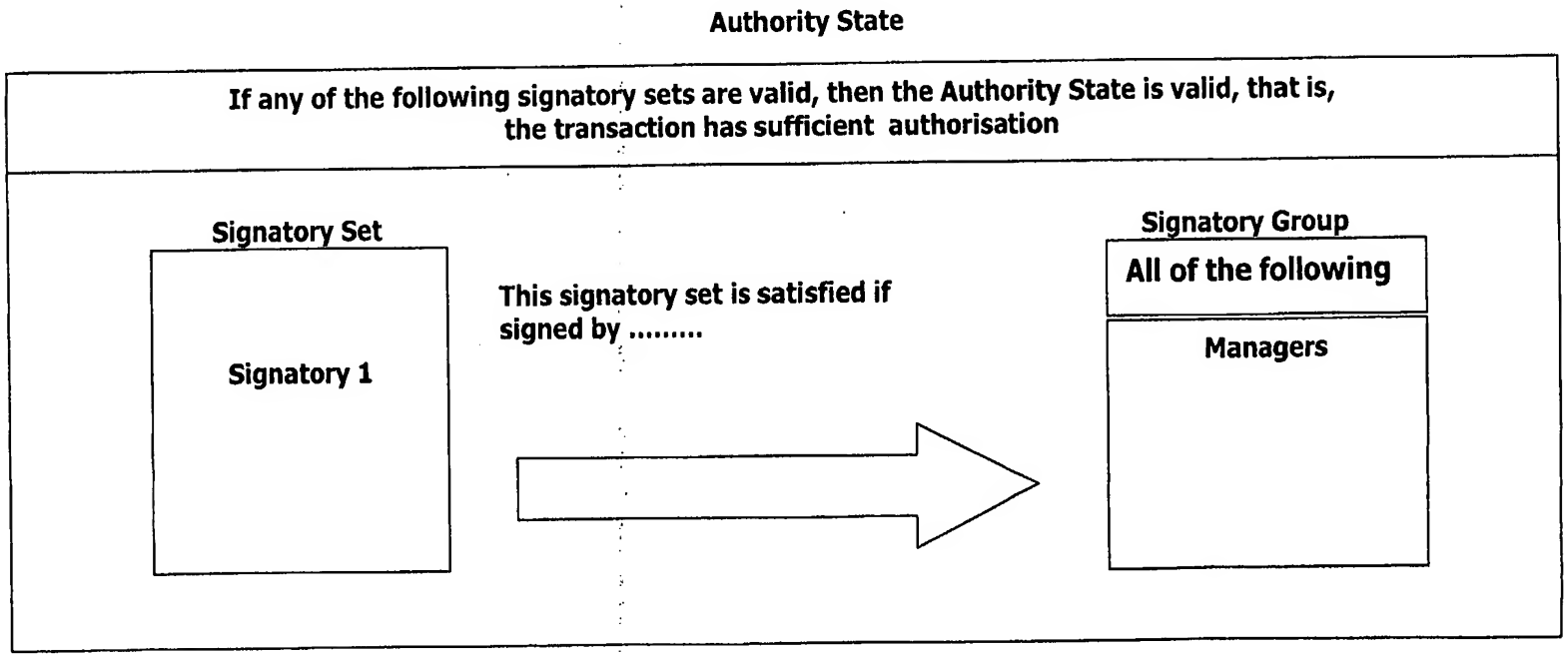

Fig. 4

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Account Information
Transaction Post Program
Back Office
Authorisation Rule Engine
Authorisation Data Manager
Channel Manager
Floating Transaction Conditions
Floating Signatory States
Standyin Database
Transaction Type Filter
Account List Filter
Localisation Component
Web Channel
Authorisation Design Wizard
Web Client

Fig. 5

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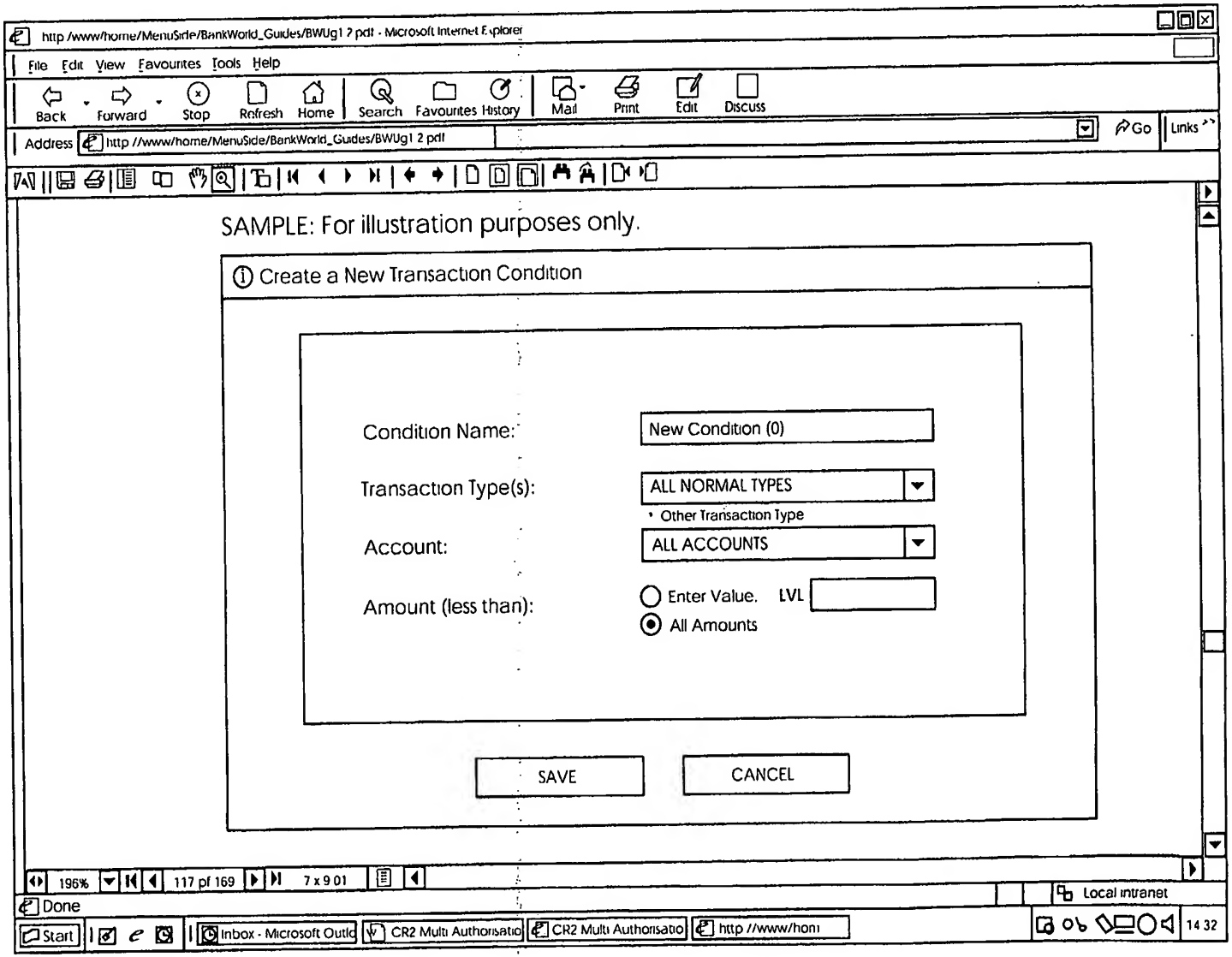

Fig. 6

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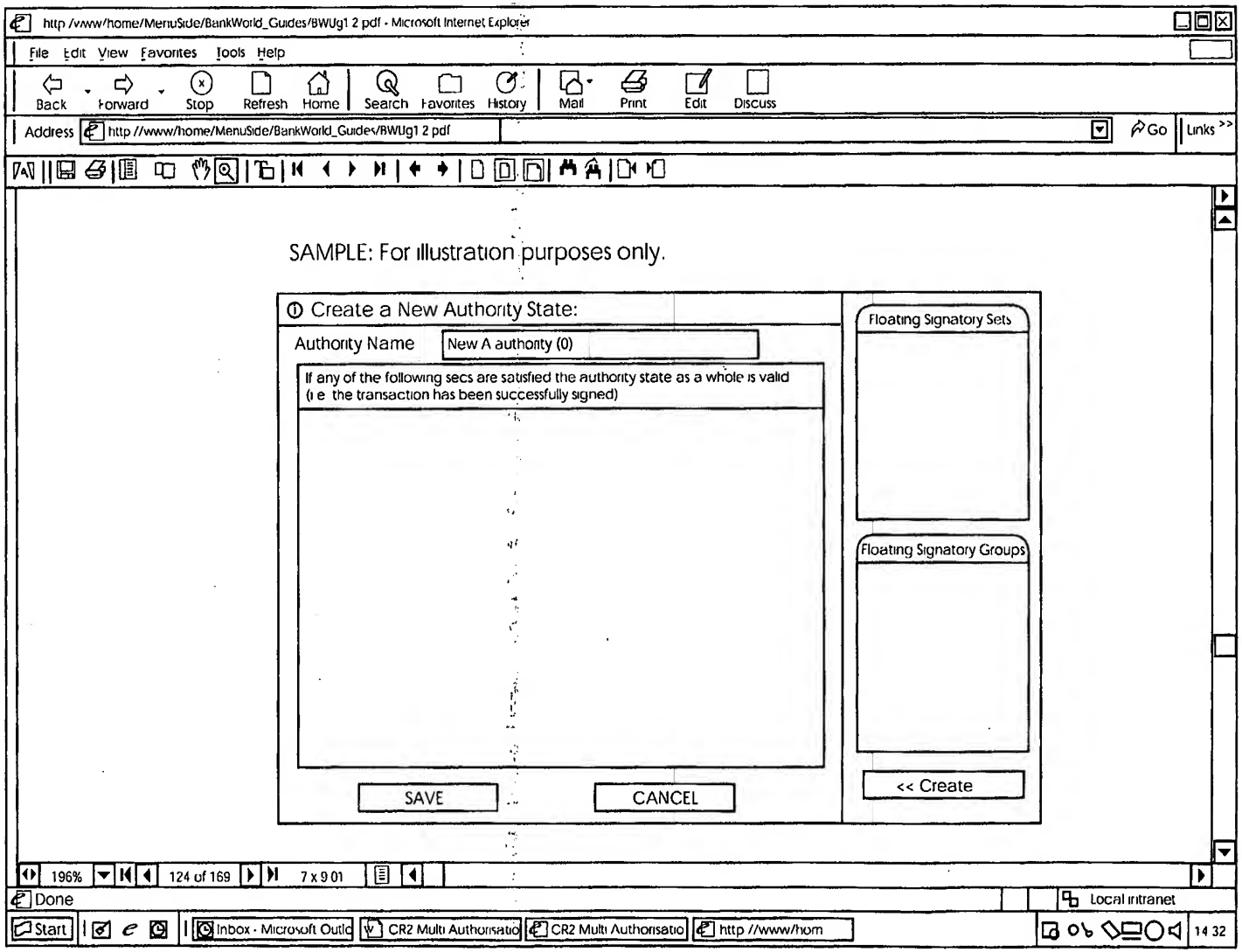

Fig. 7

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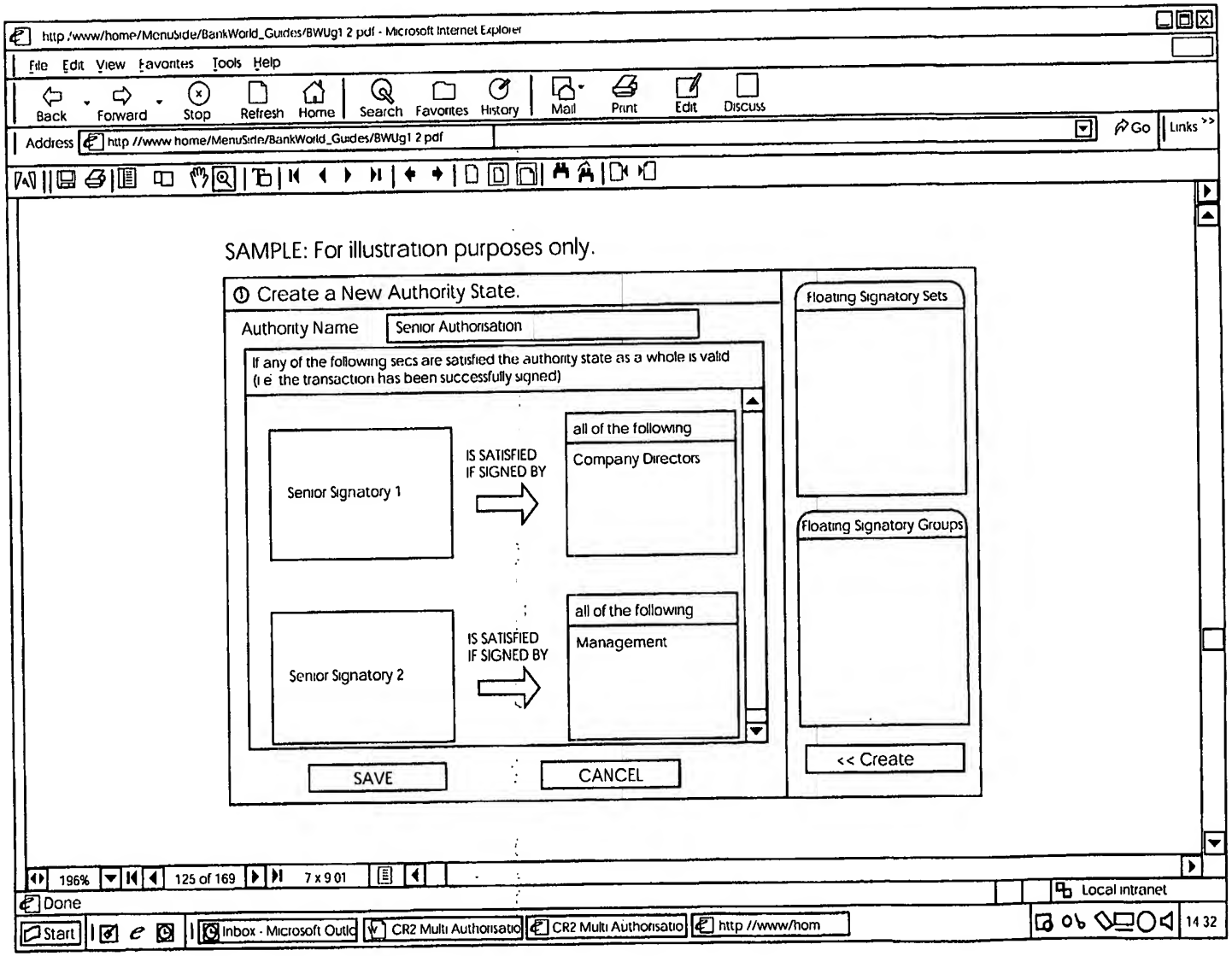

Fig. 8

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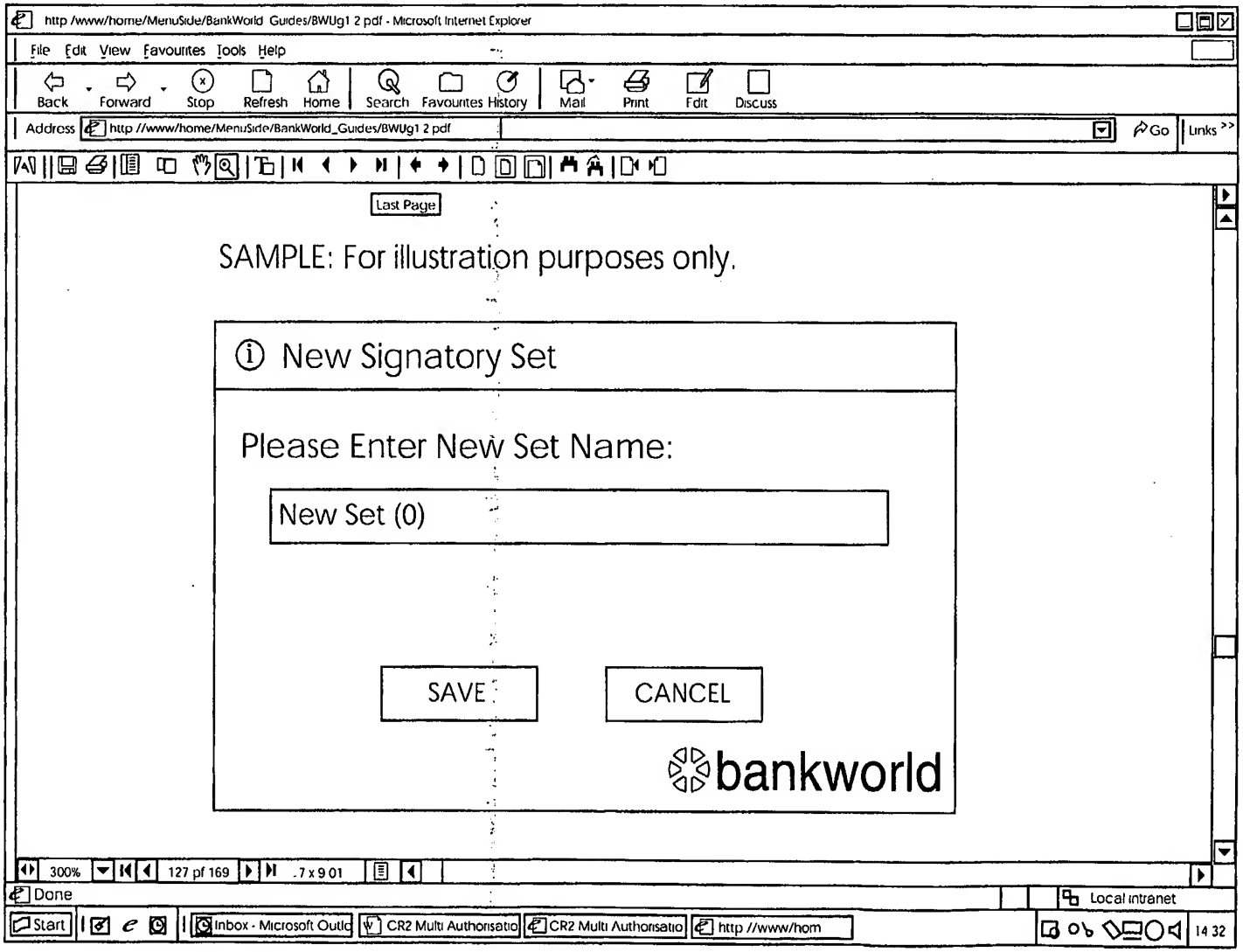

Fig. 9

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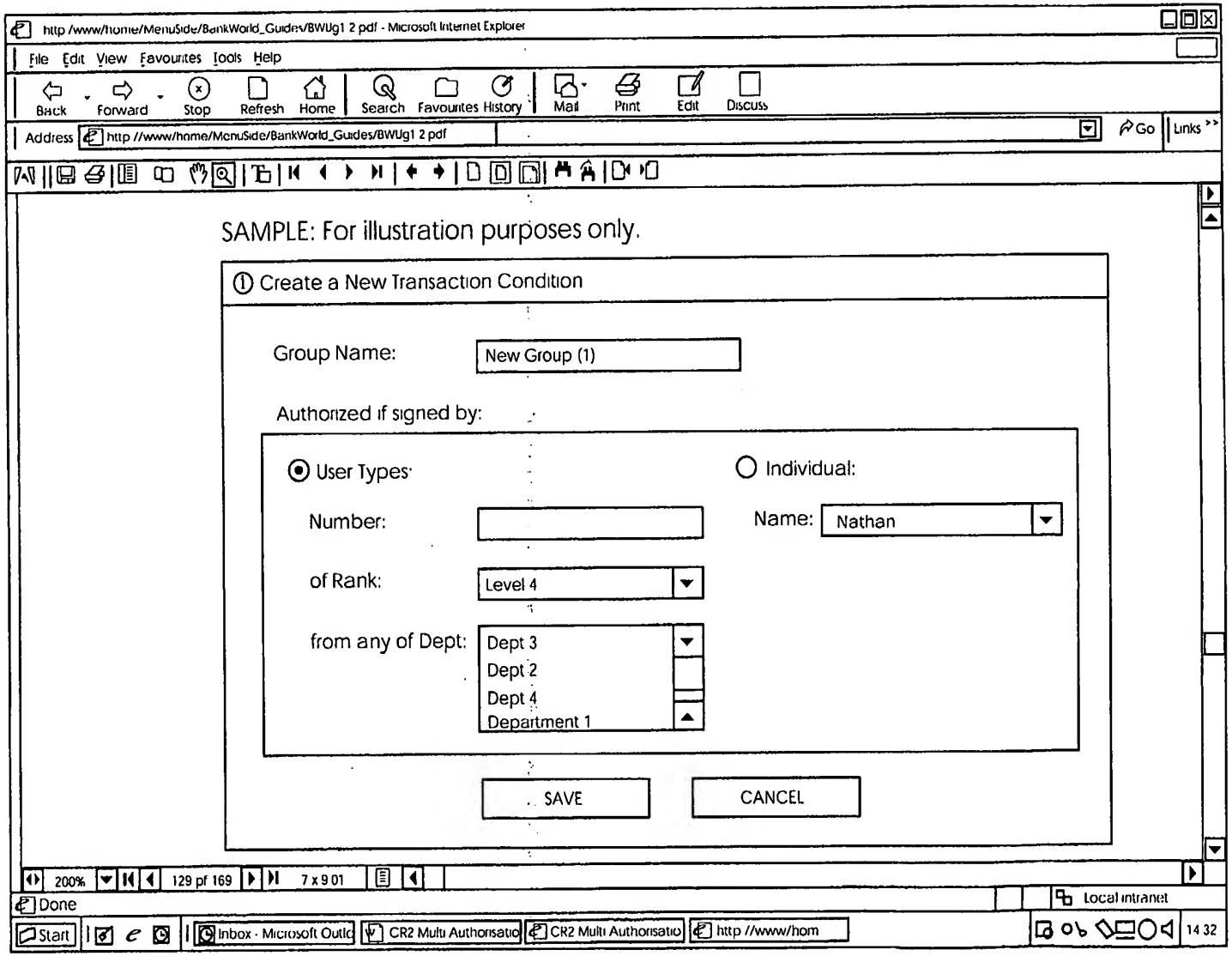

Fig. 10

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